

**8800 SERIES**

## **8800 SERIES**

### **OPERATIONS MANUAL**



TIME RECORDER COMPANY / ATLANTA, GEORGIA 30378

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## SPECIFICATIONS

### PHYSICAL

Height:	11 5/8 inches
Width:	13 inches
Depth:	12 inches
Unit Weight:	30 lbs. without program options (32 lbs. with options)
Shipping Weight:	35 lbs. without program options (37 lbs. with options)
Case:	Lexan Polycarbonate
Color:	Grey and black with red card receiver
Power Cord:	6 feet, grounded

### COMPONENTS

Card Receiver:	Standard 3.990" width, 4 3/16" width for 2 column models printing month and/or year
Ribbon:	Two color nylon (red/blue)
Timing Motor:	1 RPM, K342 type

### FEATURES

Display:	Analog
Registration:	Automatic, single or dual column with consecutive vertical alignment from top to bottom of card
Program Options:	Cronar Film Program Tape Unit which operates a Bellringer, a Tardy Indicator or both.

### POWER REQUIREMENTS

Voltage:	115 Vac (220 Vac Optional)
Current:	9 Amp. Max. Intermittent for 115 Vac 4 1/2 Amp. Max. Intermittent for 220 Vac
Frequency:	60 Hz (50 Hz Optional)

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POSSIBLE SHOCK HAZARD EXISTS WHEN CASE COVER IS REMOVED AND AC POWER IS CONNECTED. EXERCISE CAUTION WHEN SETTING TYPE SECTIONS AND TIME DISPLAYS.

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## INTRODUCTION

Read all directions carefully before operating or maintaining the 8800. Should it be necessary to return the unit, retain the original packing materials for shipping. This operations manual is designed to provide basic operating instructions. Minor maintenance and adjustments can also be performed easily and effectively by referring to these instructions. For service beyond the scope of this manual, contact the dealer from whom the equipment was purchased or LATHEM TIME RECORDER COMPANY.

## REGISTRATION STYLES

A wide selection of registrations is available to suit the needs of any business, including day-of-week or month-and-date; standard hours (1-12, 1-12) or continental (0-23) hours; and minutes (00-59), tenths (.0-.9), or hundredths (00-98).

<u>Model</u>	<u>Will Register</u>
8801	Date (01-31), Standard Hours (1-12, <u>1-12</u> ), Minutes (0-59)
8802	Date (01-31), Standard Hours (1-12, <u>1-12</u> ), Tenths (.0-.9)
8803	Date (01-31), Standard Hours (1-12, <u>1-12</u> ), Hundredths (00-98)
8804	Date (01-31), Continental Hours (0-23), Minutes (0-59)
8805	Date (01-31), Continental Hours (0-23), Tenths (.0-.9)
8806	Date (01-31), Continental Hours (0-23), Hundredths (00-98)
Add 20 to model number for day of week registration (8801 + 20 = 8821).	
8821	Day of Week (SU-SA), Standard Hours (1-12, <u>1-12</u> ), Minutes (0-59)
8822	Day of Week (SU-SA), Standard Hours (1-12, <u>1-12</u> ), Tenths (.0-.9)
8823	Day of Week (SU-SA), Standard Hours (1-12, <u>1-12</u> ), Hundredths (00-98)
8824	Day of Week (SU-SA), Continental Hours (0-23), Minutes (0-59)
8825	Day of Week (SU-SA), Continental Hours (0-23), Tenths (.0-.9)
8826	Day of Week (SU-SA), Continental Hours (0-23), Hundredths (00-98)

For month wheel (JA-DE), add 50 to the model number (8801 + 50 = 8851). For year wheel, add -5 suffix (8851-5). Month and year wheels are not available on models with tardy signal or day of week imprints. Check year wheels periodically for expiration date. Consult dealer in advance to prevent interruption of service. Manner of column shift is given by first suffix letter ("O" for one column, "M" for two column manual shift, and "A" for two column automatic shift). Card length is given by the second suffix letter ("S" for 7 inch and "L" for 9 inch cards). For a programmable bellringer, add "B" suffix. For tardy indicator, add "T" suffix. For both bellringer and tardy indicator, add "BT" suffix. Third suffix letter "W" indicates the 4 3/16" card receiver required for 2 column models printing month and/or year. Example: model 8826-A<sup>5</sup>SBT includes automatic column shift, 7" card, bellringer, and tardy feature. Model 8851-5MLW includes manual column shift, 9" card, and wide card receiver for month and year imprint.

## REFERENCE FIGURES

See accompanying instructions for additional reference figures, programming instructions and setting instructions for bellringer and tardy options if recorder is so equipped.

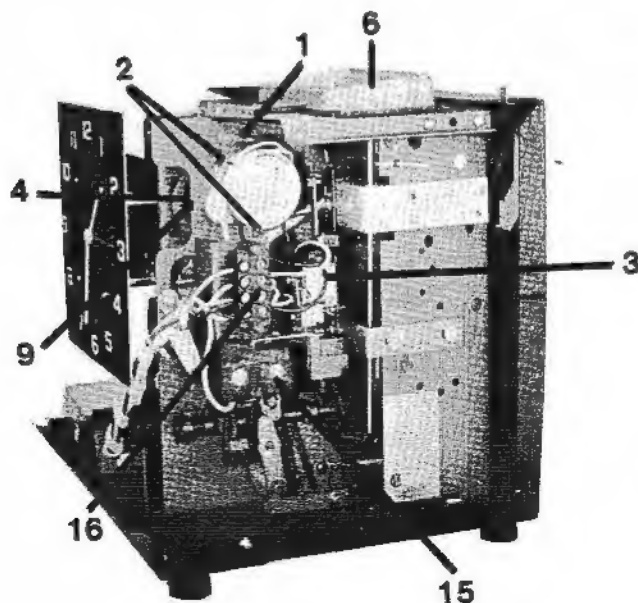


Figure 1

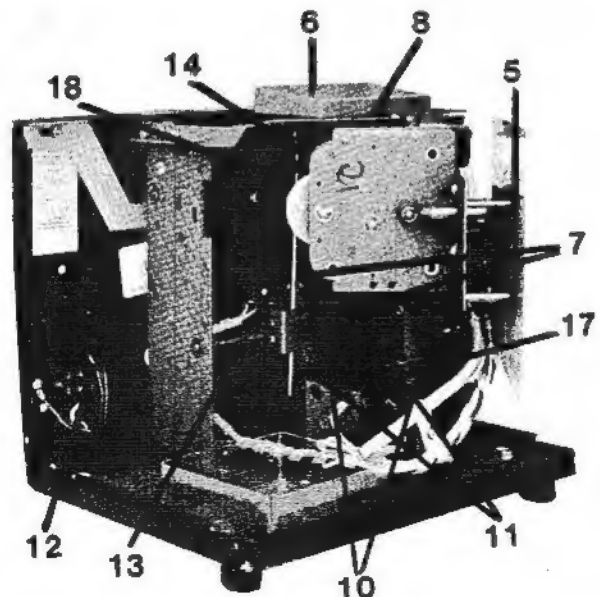


Figure 2

The following reference points are indicated on Figures 1 and 2:

- |                                  |                               |
|----------------------------------|-------------------------------|
| (1) Type Section Unlocking Latch | (10) Ribbon Reversing Fingers |
| (2) Motor Mounting Screws        | (11) Ribbon Spindles          |
| (3) Pulse Relay                  | (12) Terminal Block           |
| (4) Main Setting Wheel           | (13) Trigger Switch           |
| (5) Face Setting Wheel           | (14) Ribbon Guide             |
| (6) Card Receiver                | (15) Registration Switch      |
| (7) Ribbon Rollers               | (16) Motor Terminal Block     |
| (8) Overthrow Lever              | (17) Ribbon Solenoid          |
| (9) Motor Drive Clutch           | (18) Platen                   |

## INSTALLATION INSTRUCTIONS

When unpacking an 8800 Series recorder, be certain to remove all shipping ties from the unit to insure its proper operation. 8800 Series recorders can sit on a desk or shelf, or be mounted to a wall. Once the clock has been installed, mount bells and/or horns (if equipped with signal device) at desired locations. See Operations Manual "8000 Series Program Options," for installation instructions involving bell ringers and tardy options.

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## SETTING INSTRUCTIONS

The type wheels and the clock face function independently of one another. Setting the clock face does not set the type wheels. Similarly, setting the type wheels does not set the clock face. Each assembly must be set individually and synchronized.

1. With AC power connected, unlock the case cover and remove by sliding forward, away from the case.
2. Remove Type Section (see pp. 6 and 7 for instructions).
3. Push the Type Wheel Overthrow Lever (8, Fig. 2) down until it locks.
4. Rotate type wheels upward, one at a time, with a pointed tool (such as a ballpoint pen). Move only the ratchet-edge of the wheel to avoid damage to type characters. Align wheels to center position (Figure 3).
5. Set day or date wheels (depending on model). If the recorder imprints month, the month wheel must be reset manually at the end of each month. In months of less than 31 days, the date wheel must be reset manually as well. Day and date wheels advance at midnight.
6. Set minutes, tenths or hundredths wheels (see model number and registration style, page 2).  
  
If imprint is in minutes, turn minute wheels to correct setting. If imprint is in hundredths of an hour, use the Dial of Decimal Equivalents (page 5) to find desired time setting.
7. Set the hour wheel. If imprint is in standard time (1-12, 1-12), check the AM/PM setting. For clocks with standard hours, set the hour wheel to underscored position (1-12) for PM and to non-underscored position (1-12) for AM. Improper setting will cause day or date to advance at noon rather than at midnight.
8. Rotate the Face Setting Wheel (5, Fig. 2) to advance hands on the clock face so that they coincide with the time on the type wheels.
9. Set Program Tape and/or Tardy Indicator if so equipped. See Operations Manual "8000 Series Program Options."
10. Check that synchronized type wheels and clock face show correct time. If they do not, turn the Main Setting Wheel (4, Fig. 1) until the recorder displays correct time.
11. Re-install the type section, swinging it closed and locking it into place.
12. Make a sample registration to check all imprint features.

## DIAL OF DECIMAL EQUIVALENTS

The dial of decimal equivalents below shows the relationship between minutes, tenths, and hundredths of hours. The inner circle represents minutes. Tenths are read on the middle circle and hundredths on the outer circle. Continental hours are inside standard hours dial. To convert minutes to tenths or hundredths, locate the appropriate minute on the dial face and read corresponding tenths or hundredths of an hour.

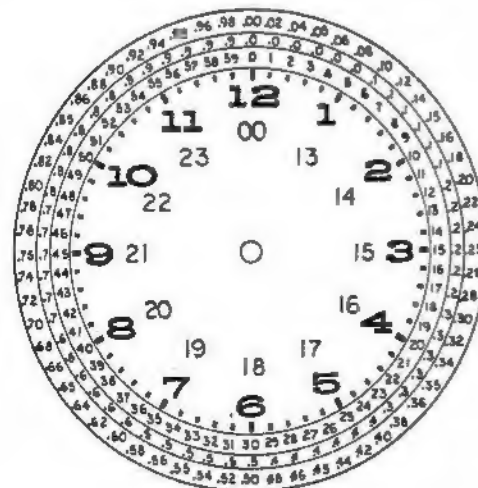


Figure 3

13. Replace case cover by aligning it with tracks along case bottom, sliding toward the back of the recorder. Lock the case.

## SETTING DECIMAL AND TENTHS WHEELS

If registration is in tenths of an hour, both tenths (0-9) wheel and decimal (.) wheels must be set. The decimal wheel increments the tenths wheel every six minutes. These wheels must be properly synchronized to insure that the tenths wheel increments at the correct minute.

1. Set the hour wheel one hour behind before synchronizing the tenths wheel to the decimal wheel.
2. Set the tenths wheel so that the numeral "9" is in center alignment.
3. With type section removed, locate the Main Setting Wheel (4, Fig. 1). Turn the setting wheel clockwise until the numeric tenths type wheel increments to "0". This advances the hour wheel to correct position and synchronizes the hour, tenths, and decimal wheels at 00 minutes.
4. Rotate Face Setting Wheel (5, Fig. 2) to advance minute hand to 00 minutes.
5. With the hour wheel set correctly,



rotate Main Setting Wheel until the face shows correct time.

**EXAMPLE:** To set tenths wheel to register the equivalent of 11:16, set hour wheel one hour early (i.e. "10"), turn setting wheel until hour wheel advances (11.0), then rotate setting wheel until the face reads "11:16." Imprint will read "11.2".

6. Complete steps 9-13 on pages 4, 5.

## CHANGING THE RIBBON

Ribbon #7-2CN (1/2" Red, 1/2" Blue) is for models 8801 to 8826. Ribbon #8-2CN (1/8" Red, 7/8" Blue) is for 8800 recorders with tardy feature. Ribbon #16 (1" solid Blue) is for models 8801 and up. Ribbons are self-reversing and should be changed when registrations become faint, which depends on the amount of usage.

1. Disconnect the AC power source.
2. Unlock case cover and remove by sliding forward, away from case.
3. Remove Type Section (see pp. 6 and 7 for instructions).
4. Remove and retain cotter pins at ends of Ribbon Spindles (11, Fig. 2). Remove and discard ribbon.

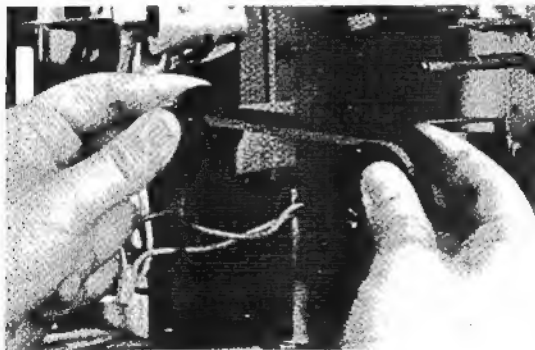


Figure 4

5. Hold ribbon as in Figure 4, sliding ribbon spools onto ribbon spindles. Replace cotter pins.

**NOTE:** On recorders with month wheel, ribbon is inserted with blue facing out, on clocks without month wheel or with tardy feature, ribbon is inserted with red facing out.

6. Thread ribbon as in Figure 5. Ribbon reversing grommets must be under Ribbon Reversing Fingers (10, Fig. 2).

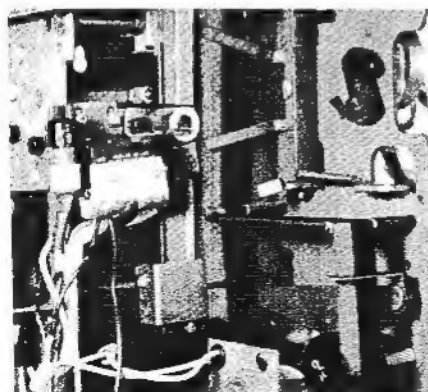


Figure 5

7. Turn spool to take up ribbon slack.
8. Re-install and reset type section.
9. Make a sample registration to check all imprint features.
10. Replace and lock case cover.

## REMOVING THE TYPE SECTION

The type section contains all type wheels with control ratchets and clock face with control gears. If the recorder is so equipped, the program tape unit is attached to the type section.

8800 type sections are interchangeable and can be easily removed for repairs as follows:



## 8800 SERIES (Without program options)

## THEORY OF OPERATION

A synchronous motor drives an indexing mechanism, which increments the type wheels once each revolution. Since both speed and accuracy of a synchronous motor are directly related to line frequency, the motor is selected to turn one revolution each minute for a given line frequency. As line frequency increases or decreases, motor speed increases or decreases accordingly. Since the type section, which imprints time, is driven by the motor, the accuracy of the time imprinted deviates with line frequency. However, line frequency is generally stable, therefore time imprints should be accurate.

The indexing mechanism consists primarily of three pawl assemblies and a set of ratchet wheels. The configuration of pawl assemblies and the ratchet wheels determines whether type indexing is in hundredths of hours, tenths of hours, or minutes. A push pawl assembly engages the ratchet wheels to advance the type wheels once each minute. An overthrow pawl assembly prevents the ratchet wheels from advancing more than one position as the push pawls increment the type section. A locking pawl assembly prevents reverse rotation of ratchet wheels at all times.

In an 8800 Series clock, minute and hour hands are coupled through gears to the indexing mechanism to give visual indication of time.

Imprints are obtained by impacting a platen against the type wheels. Impact force is provided through linkage by a print solenoid, actuated by joint closure of trigger switch SW1 and registration switch SW2. SW1 is cam actuated by the

bottom edge of inserted cards. SW2 is actuated by depressing either a registration switch actuator at the bottom of card travel or a hole finder pin located just above a hole punch assembly in the card receiver.

Prior to card insertion, SW1 and SW2 are normally open. An inserted card turns the cam, closing SW1. Closure of SW1 applies AC power to pulse relay SOL3, causing the hole finder pin to press against the card surface in search of a hole. In the absence of previous imprints, the card travels until its bottom edge contacts the registration switch actuator. Further travel depresses the positioner, closing SW2. Closure of SW2 applies AC power to the print solenoid, providing impact force to the platen. A throwout arm opens SW1 immediately following registration to remove power from the print solenoid. The card must be removed to reset the SW1 trigger.

As the platen strikes the card, the punch assembly, also driven by the platen linkage, punches a hole near the top of the card's print field. On subsequent registrations, the hole finder pin falls into the hole nearest card bottom. Further travel depresses the hole finder pin, closing SW2. A new hole is punched beneath the finder pin. Since the hole nearest card bottom triggers registration, imprints are aligned from top to bottom as the holes move down the card.

Horizontal imprint alignment is accomplished by a shift assembly which is manually operated via the card receiver. The card receiver may be shifted from side to side into either of two positions, thereby locating the column to be

imprinted between the platen and the print wheels.

An imprint ribbon is automatically ratcheted forward to the next position each registration by a ribbon shift solenoid. Power is applied through SW1

and SW2 to this solenoid at the same time as the print solenoid. A ribbon grommet, located at each end of the ribbon, actuates ribbon reversing fingers which change ribbon shift direction when either end is reached.